

Nanoscale geometry and dynamics in complex matter as seen by synchrotron x-ray micron beam techniques

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Outstanding structure-function relationship of new complex materials are often due their dynamic heterogeneous structure and composition. Examples of complex materials include biomaterials, colloids, complex liquids and strongly correlated materials. These materials are characterized by weak interactions between structural units at nanoscale and mesoscale giving rise to different spatio-temporal configurations. The visualization of the fluctuations between these configurations require advanced methodologies based on high precision X ray measurements and statistical tools for data analysis. Here we present recent results on the connections between the dynamic nanoscale geometry and the macroscopic properties of complex matter in different fields, ranging from material science to biology.

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